Background/Objectives We extended the mortality follow-up of a cohort of 25 460 workers employed at eight acrylonitrile-producing or using facilities in the U.S by 21 years. Based on 8124 deaths and 1,023,921 person-years of follow-up, we evaluated the relationship between occupational exposure to acrylonitrile and mortality.

Methods Standardised mortality ratios using deaths through December 31, 2012 were calculated. Personnel records, work histories, and monitoring data were used to develop quantitative estimates of exposure to acrylonitrile. Adjusted hazard ratios (HR) were estimated by Cox proportional hazards regression.

Results All-cause mortality and mortality from all cancer was significantly less than expected compared with the general population. Internal analyses by cumulative and average exposure revealed elevated risk of cancer of the lung and bronchus (n=808 deaths) and bladder (n=55 deaths). The HR for lung cancer was significantly elevated in the highest quintile of cumulative exposure (1.40, 95% CI 1.11–1.78, p-trend=0.09) compared to unexposed workers, peaking at ≥ 20 years since first exposure/hire HR=1.49, 95% CI 1.17–1.91; average exposure was associated with a small non-significant increased risk (HR=1.20, 95% CI 0.95–1.52). Average exposure was associated with a significantly elevated risk of bladder cancer; workers in the top tertile had an HR=2.89, 95% CI 1.35–6.18, p-trend= <0.01 compared to the unexposed, while there was non-significant increase between cumulative exposure and risk (HR=1.37, 95% CI 0.65–2.90). Significant HRs were not observed for other smoking-related outcomes.

Conclusions Extended mortality follow-up of the largest cohort of acrylonitrile exposed workers provides some evidence of a possible association between high exposure to acrylonitrile and lung and bladder cancer.

Oral Presentation Cancer

0329

OCCUPATIONAL EXPOSURE TO METALS AND WELDING FUMES, AND RISK OF GLIOMA IN THE INTEROCC STUDY

^{1,4}Marie-Elise Parent*, ^{2,3}Michelle C Turner, ^{4,6}Jérôme Lavoué, ¹Hugues Richard, ^{2,3}Jordi Figuerola, ⁵Laurel Kindl, ⁶Lesley Richardson, ⁷Geza Benke, ⁸Maria Blettner, ⁹Sarah Fleming, ¹⁰Martine Hours, ¹¹Daniel Krewski, ¹²David McLean, ^{13,14}Siegal Sadetzki, ¹⁵Klaus Schlaefer, ¹⁵Brigitte Schlehofer, ¹⁶Joachim Schüz, ^{4,6}Jack Siemiatycki, ^{17,18}Martie van Tongeren. ¹INRS-Institut Armand-Frappier, Laval, Quebec, Canada; ²Barcelona Institute for Global Health (ISGlobal), Barcelona, Spain; ³Universitat Pompeu Fabra (UPF), Barcelona, Spain; ⁴University of Montreal, Montreal, Quebec, Canada; ⁵Oregon State University, Corvallis, Oregon, USA; ⁶University of Montreal Hospital Research Centre, Montreal, Quebec, Canada; ⁷Monash University, Melbourne, Australia; ⁸Johannes-Gutenberg University Mainz, Mainz, Germany; ⁹University of Leeds, Leeds, UK; ¹⁰Université de Lyon, Lyon, France; ¹¹University of Ottawa, Ottawa, Ontario, Canada; ¹²Massey University, Wellington, New Zealand; ¹³Chaim Sheba Medical Centre, Tel Aviv, Israel; ¹⁴Tel-Aviv University, Tel Aviv, Israel; ¹⁵German Cancer Research Centre (DKFZ), Heidelberg, Germany; ¹⁶International Agency for Research on Cancer, Lyon, France; ¹⁷Institute of Occupational Medicine, Edinburgh, UK; ¹⁸University of Manchester, Manchester, UK

10.1136/oemed-2017-104636.269

Background Brain tumour aetiology is poorly understood. Based on their ability to pass through the blood-brain barrier, it has been hypothesised that exposure to metals may increase the

risk of brain cancer. Results from the few epidemiological studies on this issue are inconsistent.

Methods We investigated the relationship between glioma risk and occupational exposure to five metals - lead, cadmium, nickel, chromium and iron- as well as to welding fumes, using data from the seven-country INTEROCC study. A total of 1800 incident glioma cases and 5160 controls aged 30–69 years were included in the analysis. Lifetime occupational exposure to the agents was assessed using the INTEROCC JEM, a modified version of the Finnish job exposure matrix FINJEM.

Results In general, cases had a slightly higher prevalence of exposure to the various metals and welding fumes than did controls, with the prevalence of ever exposed ranging from 1.7% and 2.2% for cadmium up to 10.2% and 13.6% for iron among controls and cases, respectively. However, in multivariable logistic regression analyses, there was no association between ever exposure to any of the agents and risk of glioma with odds ratios (95% confidence intervals) ranging from 0.8 (0.7–1.0) for lead to 1.1 (0.7–1.6) for cadmium. Results were consistent across models considering cumulative exposure or duration, as well as in all sensitivity analyses conducted.

Conclusions Findings from this large-scale international study provide no evidence for an association between occupational exposure to any of the metals under scrutiny or welding fumes, and risk of glioma.

Oral Presentation Other

0330

INCORPORATING PRE-EXISTING KNOWLEDGE OF WITHIN, BETWEEN-WORKER, AND BETWEEN-GROUP VARIABILITY INTO EXPOSURE ASSESSMENT USING A BAYESIAN APPROACH

Harrison Quick*, Tran Huynh, Igor Burstyn. Drexel University, Philadelphia, PA, USA

10.1136/oemed-2017-104636.270

Occupational exposures can vary substantially within- and between- workers in an exposure group, as well as between groups. In prospective studies, due to resource constraints, it can be difficult to estimate these sources of variation reliably through repeated measurements on individuals from all groups. In retrospective exposure reconstructions, measurements required for evaluation of these sources of variability may be highly imbalanced or missing. To help address these issues, we propose a Bayesian statistical modelling framework for incorporating historical information for occupational exposure assessment studies with repeated measurements. More specifically, we provide guidance for constructing informative prior distributions for the within- and between-worker, as well as between-group geometric standard deviations. These priors can be anchored in either historical data or expert judgments, are intuitive to specify, and transparent in their underlying assumptions. Our approach accommodates unequal numbers of samples per worker, varying numbers of workers per group, and situations where some workers do not have repeated measurements. In addition to yielding standard output such as posterior distributions of the variance components, our approach can yield posterior distributions of